

Appl. No. 10/822,570

Attorney Docket No. 11138-011

II. Remarks

Reconsideration and re-examination of this application in view of the above amendments and the following remarks is herein respectfully requested.

Claims 1-30 and 32 remain pending.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1-9, 15-16, 21, and 23-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Enger, et al.

With regard to claims 1 and 32, specific relationships between the permeation-active partial circumferential area and the cross sectional area of the deformed circumferential seal are claimed. These elements are particularly useful when dealing with gaseous carbon dioxide to prevent the permeation of the carbon dioxide through the seal.

Enger is clearly silent with respect to these relationships. Enger deals with the problem of a more secure locking of the seal (column 2, lines 25-27). The sealing rings are primarily discussed with regard to preventing vibration, if the locking ring is situated between them. Enger does not at all mention whether the sealing rings consist of an elastomer or what the seal characteristics are in view of permeation. Especially, to a person skilled in the art, Enger clearly provides no indication as to the special problem of sealing a gap against permeation of low molecular gases, which is an important feature of the invention.



BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60610

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Based on Enger, a person skilled in the art would not know anything about the relationship of the contact length and its influence on permeation. Assuming that equation (1), which is mentioned in the description of the present application, is available to a person skilled in the art, based on Enger such a person would have been motivated to increase a length L of the seal up to a possible maximum, not a contact length. Further, based on Enger a person skilled in the art would have been motivated to use at least two sealing rings or more, which Enger considers to be indispensable. According to Enger "the coupling to the invention permits mutual rotation of the stud member 1 and the socket member 2" (column 4, lines 43, 44). If the coupling is to be rotatably mounted, an increase of the contact length would be detrimental because of the increased forces between the sealing ring 4 and the walls of the stud member 1 and the socket member 2. Consequently a short contact length is necessary. So, if it is desired to have a long permeation path, according to Enger it is necessary to use at least two seals with short contact lengths. This teaching of Enger leads away from the present invention, whereby the contact length is as large as possible and only limited in view of the desired plugging forces.

Additionally, assuming that the equation (1), which is mentioned in the description of the present application, is available to a person skilled in the art, based on Enger such a person would have been motivated to decrease the cross section A of the sealing. In contrast to Enger, the invention is based on the idea that a permeation-active partial circumferential area, which possesses the characteristics according to the present invention is significant for controlling



BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60610

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permeation leakage. Further, Enger does not describe how the sealing rings have to be placed in the respective grooves to reduce the partial circumferential area. Fig. 2 shows a placing of the sealing rings, but a permeation-active partial circumferential area of the circumferential seal could not be derived by a person skilled in the art – neither from the drawing, nor from the description of Enger.

Claims 1 and 32 are directed to a system for conduits, fittings or assemblies, which are intended for carrying gaseous carbon dioxide and therefore the claims are not directed to "pressurized medium" in general as is Enger. Indeed, for fluidic liquids, which have molecules of a bigger size than carbon dioxide, the permeation process does only play a subordinated role in the sealing problem. This is a reason, why a person skilled in the art starting from Enger would not have considered permeation as being a relevant influencing parameter for the quantity of fluid, which passes through the seal. In a connection according to one aspect of the invention, the sealing system allows only that a value of a quantity of gaseous carbon dioxide as a result of permeation is not greater than about 2.5 g per year, preferably not greater than about 1 g per year (cf. e.g. claim 25).

Further, claims 1 and 32 clearly describe that the ratio that determines a permeation through the circumferential seal can be defined by a permeation-active partial circumferential area of the circumferential seal, which is located in the vicinity of the gap on the side of the circumferential seal, where the reference pressure (cf. fig. 2) is acting and which is determined by an arcuate line of a



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pressed radial cross-sectional area of the deformed circumferential seal in relation to the contact length.

Since Enger does not mention or show a permeation-active partial circumferential area of the circumferential seal and does not disclose a contact length, it cannot be stated that "the cross section of the nonpressed circumferential seal, the groove depth and the gap width and the groove length are coordinated with one another in such a way, that in a ratio that determines a permeation through the circumferential seal, the permeation-active partial circumferential area" has a specific value. Enger is clearly silent about this and such a configuration was not contemplated.

Further, the Examiner relies on *In Re Reese* to summarily dismiss the claimed configurations as optimizations. However, *In Re Reese* considered optimizing parameters based on known relationships that provide merely expected results. In the instant application, the examiner has failed to provide evidence that the effects of the claimed relationships were known in the art at the time of the invention. Therefore, the examiner's reliance on *In Re Reese* is improper.

Further, claim 2-9, 15-16, 21, and 23-24 depend from claim 1 and are therefore, patentable for at least the same reasons as claim 1.

Claims 10-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Enger, et al.

Claims 10-14 depend from claim 1 and are, therefore, patentable for at least the same reasons as given above in support of claim 1.

BRINKS
HOFER
GILSON
& LIONE

BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60610

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Claims 17-20, 22 and 25-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Enger, et al.

Claims 17-20, 22 and 25-30 depend from claim 1, and are, therefore, patentable for at least the same reason as given above in support of claim 1.

Claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Enger, et al. in view of EPO patent publication 1,213,515.

Claim 30 depends from claim 1, and is, therefore, patentable for at least the same reasons as given above in support of claim 1.

Accordingly, applicants respectfully request withdrawal of the rejections under 35 U.S.C. §103.

Conclusion

In view of the above amendments and remarks, it is respectfully submitted that the present form of the claims are patentably distinguishable over the art of record and that this application is now in condition for allowance. Such action is respectfully requested.

Respectfully submitted by,

Dated: January 3, 2007



Steven L. Oberholtzer
Reg. No.: 30,670
Attorney for Applicant(s)

BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, IL 60610
(734) 302-6000



BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60610